

WIRELESS COMMUNICATION SYSTEM USING BLOCK  
FILTERING AND FAST EQUALIZATION-DEMODULATION  
AND METHOD OF OPERATION

ABSTRACT OF THE DISCLOSURE

5        There is disclosed a transceiver for use in a base station  
      (BS) of a fixed wireless network that communicates with a plurality  
      of subscriber transceivers via time division duplex (TDD) channels.  
      The BS transceiver comprises: 1) a receiver front-end for receiving  
10       data burst transmissions from the plurality of subscriber  
      transceivers in an uplink portion of a TDD channel, wherein the  
      receiver front-end demodulates the received data burst  
      transmissions into a digital baseband signal in-phase (I) signal  
      and a digital baseband quadrature (Q) signal; 2) a first frequency  
15       domain feedforward equalization filter for receiving the I signal  
      and performing a Fast Fourier Transform on a block of N symbols in  
      the I signal to produce a first symbol estimate sequence; 3) a  
      second frequency domain feedforward equalization filter for  
      receiving the Q signal and performing a Fast Fourier Transform on  
20       a block of N symbols in the Q signal to produce a second symbol  
      estimate sequence; 4) an adder for receiving the first signal  
      estimate sequence on a first input and the second signal estimate  
      sequence on a second input and producing a combined symbol estimate  
      sequence; 5) a slicer for receiving and quantizing the combined

symbol estimate sequence to produce a sequence of decided symbols;  
and 6) a time domain feedback filter for receiving the sequence of  
decided symbols and generating a symbol correction sequence that is  
applied to a third input of the adder.